Independent Verification & Validation Facility	Corrective and Preventive Action	53.IT.0014 Revision: E Effective Date: March 2000

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APPROVAL SIGNATURES		DATE
Louis Blazy (original signature on file)	IV&V Facility Director	03/29/00

REVISION HISTORY			
Rev No.	Description of Change	Author	Effective Date
Initial	Initial Release	John Griggs IT/204	05/01/98
A	Section 2.0,3.0,5.0 And 6.0 were modified and added flow chart.	Siamak Yassini IT/332	07/23/98
B	Quality Record - format change, modified section 2.2	Siamak Yassini IT/332	08/26/98
C	Consolidated forms	Siamak Yassini IT/332	01/28/99
D	References to Ames Quality Manual replaced with references to IV&V Facility Quality Manual Updated Section 5.1.4 & 6.1.2	Siamak Yassini IT/332	09/10/99
E	Adding Track wise automated tool section 3.3	Siamak Yassini IT/332	3/30/00

REFERENCE DOCUMENTS	
Document Number	Document Title
53.IT.0000	IV&V Facility Quality Manual
53.IT.00016	Control of Quality Records
53.IT.0009-4	Control of Nonconforming Product
53.IT.00017	Internal Quality Audits

1.0 Purpose

The purpose of this System Level Procedure (SLP) is to describe the corrective and preventive action processes at the NASA IV&V Facility that establish the methods for eliminating the cause(s) of product and service nonconformances and customer complaints.

2.0 Scope

This procedure applies to all processes, products, and services found to be nonconforming by any IV&V Facility personnel and requiring corrective and/or preventive action.

2.1 Corrective Action

Corrective and preventive actions may be initiated by anyone as a result of nonconformities such as:

2.1.1 Findings from internal audits (see 53.IT.0017, *Internal Quality Audit*), customer or third party audits, audits by regulatory bodies, and the organization's audits of their suppliers' Quality Systems.

2.1.2 Action items from executive management's reviews of the Quality System's effectiveness.

2.1.3 Customer complaints and field failures.

2.1.4 Non-conformities identified by control of non-conforming products.

2.1.5 Non-conformities related to process analysis of subcontractor.

2.2 Preventive Action

Preventive actions are determined from the analysis of appropriate data to detect trends and identify causes that may result in future non-conformities. Such data sources may include but are not limited to the following:

2.2.1 Records of Requirements Reviews and Design Reviews

2.2.2 Supplier Performance Records

2.2.3 Metrics

2.2.4 Internal and External Audit Reports

2.2.5 Customer Granted Concessions

2.2.6 Subcontractor non-conformities related to cost, schedule and resources

2.3 No Further Action Required

The following items will most likely belong to the class requiring no further formal action:

2.3.1 Observation Comments

2.3.2 Simple fixes (typing, error, misspelling, etc)

2.3.3 Misunderstanding and misreading

2.3.4 Previously identified problems whose potential solutions have been found to have a poor cost/benefit ratio

3.0 Definitions and Acronyms

3.1 Corrective Action (CA)

Action taken to eliminate the cause(s) of an existing nonconformity, defect or other undesirable situation with a product or process in order to prevent recurrence.

3.2 Preventive Action (PA)

Action taken to eliminate the cause(s) of a potential nonconformance, defect, or other undesirable situation to prevent occurrence.

3.3 Correction/Preventive Action Request (C/PAR)

A document used for requesting corrective or preventive action. C/PAR is documented on IV&V Form 1005 manually and or automated tool called “Track wise”.

3.4 Product

A product is the result of activities or processes. IV&V products may include service, software, analysis reports, or a combination of these.

3.5 Process Owner

The person writing a document and/or person responsible for control of a document.

3.6 Non-Conformance

See control of non-conforming product under 53.IT.0009-4 related to non-conformances.

3.7 C&PA Manager

The person who is responsible for assigning a number, tracking and reporting the status of C/PARs to executive management.

3.8 Process Owner's Manager

The person who is responsible for taking action on C/PAR submittal by the originator.

3.9 Implementing Manager

The person who is responsible to implement the C/PAR related to non-conformities from his/her related task.

3.10 Process Owner

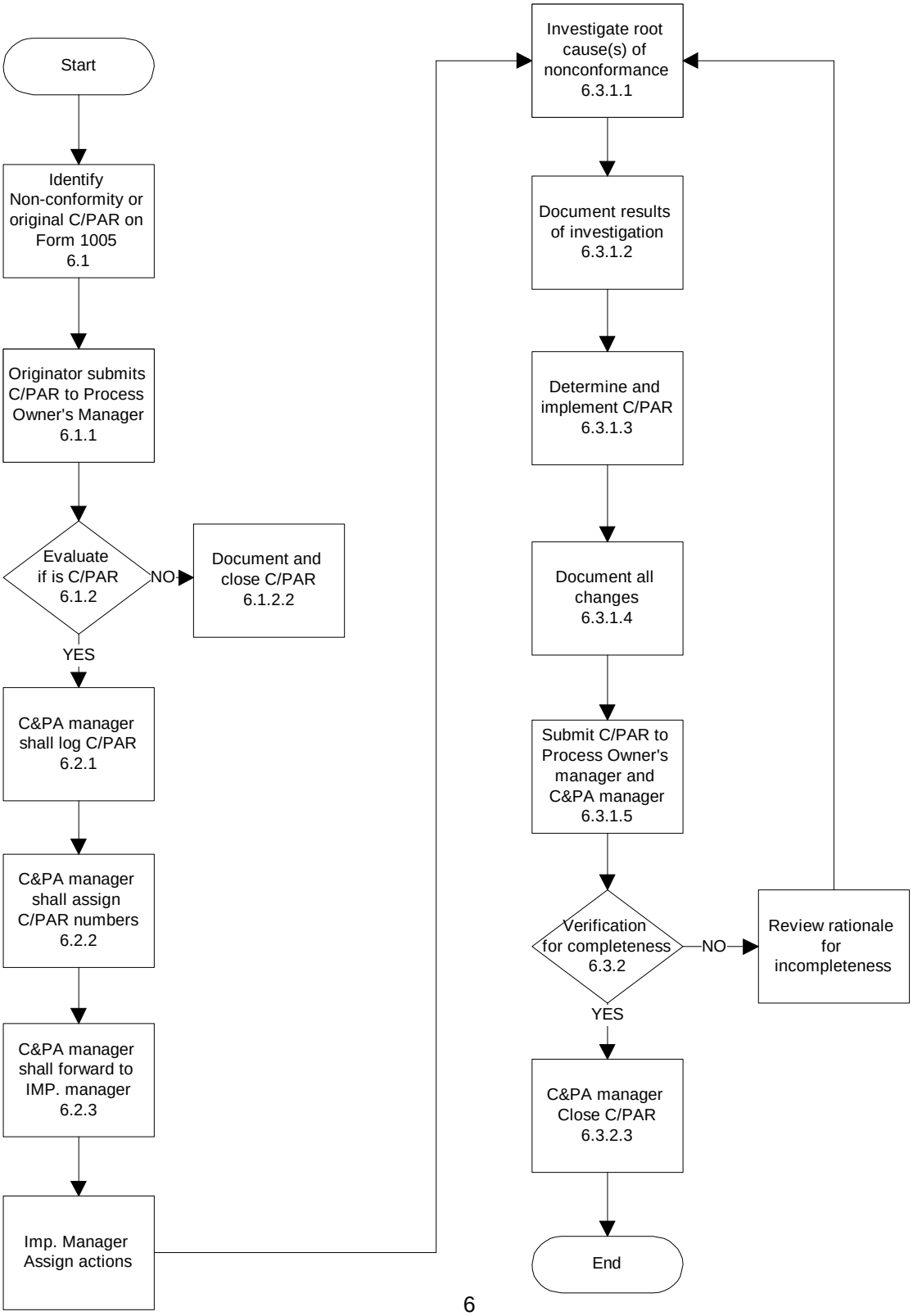
The person who is identified within the quality system as having responsibility for a specific procedure.

3.11 Originator

The person initiates a C/PAR.

4.0 Flowchart

The process for Corrective and Preventive Action is depicted in the flowchart shown on the following page.


Start
Identify Non-conformity or original C/PAR on Form 1005 6.1
Originator submits C/PAR to Process Owner's Manager 6.1.1
Evaluate if is C/PAR 6.1.2
NO
Document and close C/PAR 6.1.2.2
YES
C&PA manager shall log C/PAR 6.2.1
C&PA manager shall assign C/PAR numbers 6.2.2
C&PA manager shall forward to IMP. manager 6.2.3
Imp. Manager Assign actions
Investigate root cause(s) of nonconformance 6.3.1.1
Document results of investigation 6.3.1.2
Determine and implement C/PAR 6.3.1.3
Document all changes 6.3.1.4
Submit C/PAR to Process Owner's manager and C&PA manager 6.3.1.5
Verification for completeness 6.3.2
NO
Review rationale for incompleteness
YES
C&PA manager Close C/PAR 6.3.2.3
End

5.0 Responsibilities

5.1 Corrective and Preventive Action (C&PA) Manager:

The Corrective and Preventive Action Manager is responsible for the following:

5.1.1 Establishing and maintaining a system for corrective and preventive action.

5.1.2 Administering control of C/PARs.

5.1.3 Ensuring root causes of nonconformance are identified.

5.1.4 Administering control of and tracking customer feedback or complaints. Customer feedback and/or complaints will be handled in the same manner as other nonconformities with the root cause identified and all information documented in the CAR.

5.1.5 Resolving any conflicts and/or misunderstandings of required actions.

5.1.6 Preparing the Corrective and Preventive Action Management Status Report.

5.2 Each line manager and or supervisor will ensure:

5.2.1 Initiation of C/PAR to eliminate the root cause of current and potential non conformities.

5.2.2 Timely response to received C/PARs.

5.3 All Personnel

5.3.1 Anyone who becomes aware of a current or potential nonconformance with a significant effect on the ability of IV&V products and services to meet cost, schedule, or technical requirements will initiate a Finding Report (IVV Form 1005).

5.3.2 The Process Owner who has received a C/PAR is responsible for the following:

5.3.2.1 Ensuring that corrective action and preventive action plans and schedules required for the resolution of C/PARs are developed and implemented.

5.3.2.2 Assigning corrective and preventive action responsibilities and authority to appropriate personnel.

5.3.2.3 Determining the root causes of nonconformance.

5.3.2.4 Identifying and implementing changes required by C/PARs.

5.3.2.5 Ensuring that all applicable data, including incorporated changes to operating practices, are documented.

5.3.2.6 Requesting line management support when required for timely response and closure.

5.3.2.7 Submitting C/PAR responses in a timely manner to the Corrective and Preventive Action Manager.

6.0 Procedure

The C/PAR process is originated whenever a current or potential nonconformity warrants a root cause analysis and corrective or preventive action because it has a significant effect on the product's or service's ability to meet cost, schedule, or technical requirements.

6.1 Identify and Originate a C/PAR:

6.1.1 The C/PAR Originator shall submit a C/PAR to the Process Owner's manager.

6.1.2 The Process Owner's manager shall evaluate validity of the C/PAR. A major finding will result in immediate action. A minor finding may require immediate action. An observation does not require immediate action.

6.1.2.1 If immediate Corrective Action (CA) is required, identify and implement CA to prevent additional nonconformities.

6.1.2.2 If C/PAR is not valid, document rationale and close the C/PAR.

6.1.2.3 Submit to C&PA Manager for logging and tracking.

6.2 Recording C/PAR:

The C&PA Manger shall:

6.2.1 Log C/PAR to database

6.2.2 Assign C/PAR number

6.2.3 Forward to Process Owner

6.3 Investigate, Document, and Implement Corrective and/or Preventive Action.

6.3.1 The Process Owner shall:

6.3.1.1 Assign action to appropriate personnel to investigate and determine root cause(s) of the nonconformance.

6.3.1.2 Document the results of the investigation.

6.3.1.3 Determine and implement corrective and preventive action needed to eliminate the cause(s) of nonconformance.

6.3.1.4 Document all changes (procedural, design, and others) made as part of the C/PAR.

6.3.1.5 Submit documented changes to the Process Owner's manager and C&PA Manager.

6.3.2 The Originator’s manager shall either:

6.3.2.1 Review C/PAR response and forward to the C/PAR originator for verification of effectiveness, or

6.3.2.2 Review and return C/PAR to implementing manager, if response to the C/PAR is incomplete.

6.3.2.3 Close the C/PAR.

6.3.2.4 C&PAR Manager will log the closure of the C/PAR in a database log sheet and file a hard copy in C/PAR folder.

7.0 Metrics

Approximately monthly, the C&PA Manager will report metrics to a management representative. Such metrics may include the following:

7.1 Number of C/PARs logged

7.2 Percent of C/PARs rejected

7.3 Percent of C/PARs where no cause was determined

7.4 Percent of C/PARs where no action was effective

7.5 Customer feedback indicating the effectiveness of the closed-loop Corrective and Preventive Action processes.

8.0 Records

8.1 Records governed by this SLP include all electronic, magnetic, optical, or paper quality records which track, status, or govern corrective and preventive action.

8.2 The following records will be generated during the control of nonconforming products and will be managed in accordance with 53.IT.0016, *Control of Quality Records*.

Document Name and Identification Number	User Responsible for Record Retention	Retention Requirement	Location
Finding Report (IVV Form 1005) and or Automated form from Track wise	C/PAR Manager	None- records may be destroyed after 5 years	C/PAR Manager Folder
C/PAR Database or automated form from Track wise tool	C/PAR Manager	None- records may be destroyed after 5 years	C/PAR Manager Folder